Overview of CDC Guidance on Infection Control in Healthcare Facilities (2009 H1N1 Influenza)

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Coordinator: Welcome and thank you for standing by. At this time, all participants are in a listen-only mode until the question and answer session, at which time you may press star 1 to ask a question. You will also be prompted to record your name. Please unmute your phone and record your name clearly so that I may introduce your question.

Today's conference is being recorded. If you have any objections, you may disconnect at this time. And I'd like to turn the call over to LeShaundra Cordier. Thank you, ma'am, you may begin.

LeShaundra Cordier: Good afternoon and welcome to today's COCA conference call, Overview of CDC Guidance on Infection Control in Healthcare Facilities 2009 H1N1 Influenza. We are very excited today to have Dr. Arjun Srinivasan of the Division of Healthcare Quality Promotion and Dr. David Weissman of the National Institute for Occupational Safety and Health.

We are using a PowerPoint presentation for part of this call that you should be able to access from our Web site. If you have not already downloaded this presentation, please go to www.emergency.cdc.gov/coca. Click on conference call Information Summaries and Slide Sets. The PowerPoint can be found under the call information number and pass code.

Our objectives for today; after this activity, participants will be able to, one, identify updates and revisions to CDC's interim guidance on infection control measures to prevent 2009 H1N1 Flu Transmission in Healthcare Facilities; two, understand approaches and importance for facilities to have a comprehensive plan with regard to respiratory protection, which is practical;

three, describe specific recommendations within the guidance, including promoting and administering H1N1 vaccine as well as seasonal flu vaccine.

In compliance with continuing education requirements, all presenters must disclose any financial or other relationships with the manufacturers of commercial products, suppliers of commercial services or commercial supporters as well as any use of unlabeled products or products under investigational use.

Presentations will not include any discussion of unlabeled use of product or a product under investigational use with the exception of Dr. Srinivasan's discussion of the re-use of N95 respirators that are labeled for single use only. There is no commercial support. I will now turn the call over to Dr. Srinivasan.

Arjun Srinivasan: Thank you, LeShaundra. Good afternoon, everyone. I will begin with a brief discussion of the context of the updated interim Infection Control Guidance for 2009 H1N1 Influenza. And this is found on Slide 4 of the slide set that's available on the Web site entitled Overview.

This updated guidance that was released on October 14 of 2009 replaces previous infection control guidance that was released back in April or May. This guidance applies to all settings where healthcare is delivered and we'll go into more detail in that during the presentation.

It applies uniquely to the 2009 H1N1 pandemic. This guidance is not intended to establish new infection control policies for seasonal influenza. And perhaps most importantly, I should point out that guidance on infection control for 2009 H1N1 will be updated as needed as new information becomes available. So it will be important to stay posted for new information on infection control recommendations as data emerges that prompts changes in this guidance.

Moving to the next slide, I've summarized the key differences from the previous guidance documents. And I think there are four main areas that I want to highlight as differences. And we'll go into detail on all of these.

The first is that this new document includes increased emphasis interest on the importance of a multifaceted infection control approach, sometimes referred to as a hierarchy of controls. This document does contain a revision to the exclusion time period for healthcare personnel with H1N1 influenza to be more in line with what's recommended outside of healthcare settings for exclusions.

There are some changes to isolation precautions, more specifically with respect to the use of gowns and eye protection, which are now recommended to be used as part of standard precautions and not routinely for the care of patients with the 2009 H1N1 influenza.

And the document also contains an updated and expanded discussion on respiratory protection, though the fundamental recommendations for respiration protection for healthcare personnel has not changed from previous guidance.

Moving to the next slide, we'll talk a little bit about what settings and to which personnel this guidance applies. This guidance applies very broadly to any healthcare personnel, which is defined as all persons whose occupational activities involve contact with patients or contaminated material. And obviously that includes a very broad swath of healthcare personnel in facilities.

And it includes importantly not just employees of facilities but would also apply to non-employees, people like volunteers, contractors, students, clergy who may come into the facility. In terms of where it applies, again, the

definition is very broad. It applies in any setting where healthcare is being delivered.

And that includes traditional care settings like acute care, long term care and outpatient care. But also settings that people don't always think of as healthcare settings, such as care that's being provided in the home, home health care, healthcare being provided in school clinics or in correctional facilities and those types of areas. Wherever healthcare is being delivered, these guidelines would be applicable.

On the next slide, we summarize which patients should - this guidance applies to. This guidance applies to all patients who have confirmed or suspected H1N1 influenza infection. Now we fully acknowledge that the symptoms of H1N1 influenza are non-specific and indistinguishable from seasonal influenza. And we also acknowledge that testing for H1N1 infection may be limited in some areas.

And as a result, in all likelihood this guidance may be applicable for all patients with respiratory illness in some settings, particularly when H1N1 activity is present in a community.

The next slide covers the general modes of transmission of 2009 H1N1 influenza. And I think it's important to set the stage for the discussion of specific ways to prevent the transmission of H1N1 influenza by talking a little bit about what we know about how this virus is transmitted.

Much like seasonal influenza, H1N1 influenza appears to be transmitted in three different ways. The first is through the contact, usually of the hands of the healthcare personnel or other person with an infectious patient or fomite followed by self-innoculation onto mucosal surfaces.

There's also the potential for droplet exposure of mucosal surfaces, where larger droplets that are exhaled or coughed out or sneezed from an infectious patient land on the mucus membranes of a healthcare personnel and then subsequently result in an infection.

And the final mechanisms of transmission are small particle aerosols that travels in the vicinity of an infectious individual and can infect the lower airways of healthcare personnel.

So we do know from the data that's available that these are the most likely modes of transmission of 2009 H1N1 influenza. But unfortunately, like seasonal influenza, we don't have definitive data on the relative importance of each of these routes. And so all of them have to be addressed in preventing transmission.

In terms of moving into some of the specific infection control recommendations - this is covered on the next slide, Number 9 - one of the most important recommendations at this time is that facilities review and update pandemic plans. Most healthcare facilities have already developed pandemic influenza plans and many have already implemented pandemic influenza plans.

But all facilities should now be reviewing their pandemic plans in light of the current pandemic situation and begin considering implementation considerations, specifically issues with resource allocation, staffing and surge capacity.

For facilities that need assistance with developing or refining their pandemic plans, there are some pandemic plan checklists that can be helpful. And those are available at www.pandemicflu.gov, if you search for pandemic plans.

On Slide 10, as I alluded to earlier, we strongly recommend that facilities implement a multi-faceted infection control approach for limiting the transmission of 2009 H1N1 influenza. And this is guidance that I would point out applies broadly to seasonal influenza as well. And that facility should be employing a variety of different complementary infection control strategies, which is sometimes referred to as a hierarchy of controls because it groups interventions into categories based on their relative effectiveness.

Slide 11 summarizes this hierarchy of controls and ranks them in their preferred order. And I'll talk about each of these in a little bit of detail. The first is to eliminate exposures; the second is implementing engineering controls; the third are administrative controls; and the fourth rung on this hierarchy is the use of personal protective equipment.

So let's talk about each of these in a little bit of detail, moving on to Slide 12, Eliminate Exposures. Now this is obviously the highest rung in the hierarchy of controls because it is ultimately the most effective measure. If you eliminate the potential exposure to an infectious patient, there is essentially a zero risk of transmission.

And so eliminating exposures is the most effective way to prevent transmission. Some ways facilities can do this would include minimizing outpatient visits -especially for patients with mild respiratory illness who don't need to be seen in healthcare facilities and who can safely stay at home. We can postpone elective visits and procedures for patients who have respiratory illnesses.

And when possible, we can work hard to exclude ill visitors from our facilities. And those are all measures, like I said, that would eliminate the potential exposure and therefore protect healthcare personnel and promote good infection control.

The next rung on this hierarchy are engineering controls, detailed on Slide 13. Engineering controls fall in the second tier because they don't depend on specific implementation effectiveness by an individual healthcare personnel or facility. These types of engineering controls include things like using partitions in triage areas and patient care areas to reduce potential exposures and using things like Plexiglas barriers in triage and intake areas.

And again, these are measures that can be applied. They are not dependent on compliance or behavior and are therefore very effective in reducing potential exposures.

The next rung on the hierarchy or the next component of strategies in this multi-faceted approach would be administrative controls summarized on the next slide, Number 14. Now the reason these fall into this third tier of recommendation is the fact that they depend on consistent implementation by both management and healthcare personnel.

With that said, I will point out that there are some very effective strategies for infection control that are in this tier of approaches. And these include vaccination, the implementation of respiratory hygiene and cough etiquette strategies and enforcing exclusion of ill healthcare personnel. So though these may rank third in the hierarchy of controls, these are obviously things that are very, very important for healthcare facilities to focus on and implement.

The last tier in the hierarchy or the last component of the multi-faceted approach is the use of personal protective equipment, as summarized on Slide 15. Now the reason these - the use of personal protective equipment comes last in the hierarchy is the use of PPE is highly dependent on consistent application by the wearer, whenever exposures occur and also was highly dependent on the technique the wearer uses and the proper functioning of the equipment.

Now that said, we fully recognize that the use of PPE remains a very important component of the multi-faceted infection control approach and thus our healthcare workers must be trained on the proper use of personal protective equipment. They must be instructed both on when they need to PPE and how they should properly wear it.

So let me move now, after this transition slide, Slide 16, I'm going to move into some of the specific recommendations that are contained in the document. I'll point out that the updated guidance does include specific details on all the aspects of the - in the hierarchy of controls in this multi-faceted approach. But I'd like to touch on a few of the specific recommendations on these next slides.

The first one of course is vaccinations. We strongly recommend that facilities promote and administer both the 2009 seasonal and the 2009 H1N1 vaccine. We recognize that there have been availability issues and continue to be availability issues of the 2009 H1N1 vaccine. But as that vaccine becomes available, healthcare facilities should be administering it to their healthcare personnel, who are a high priority group for vaccinations.

In settings where the H1N1 vaccine supplies are limited, priorities should go to healthcare personnel in two categories. The first would be those who are most likely to exposed to infectious patients and the other would be those that area t high risk for complications of H1N1 infection. That would be healthcare personnel who are themselves at high risk for complications from H1N1 infection.

The next slide, Slide 18, summarizes some information on the use of the live attenuated vaccine in healthcare settings. And this slide was inserted to address some specific questions that have come up. The live attenuated vaccine can be used in healthcare personnel, given that two criteria are met.

First and foremost, they must meet the labeling eligibility criteria to receive live attenuated vaccine.

And secondly, healthcare personnel who get live attenuated vaccine cannot work in areas with severely immunocompromised patients in protected environments. The most specific example of this would be a bone marrow transplant unit. Now the issue of the use of live attenuated vaccine for other healthcare personnel, including those who work with less immune suppressed patients has been discussed by the Advisory Committee in Immunization Practices.

And there is agreement that this vaccine can be used for healthcare personnel who work with less immune suppressed patients and can be used for healthcare personnel working in neonatal intensive care units. Moreover, the ACIP has stated that there is no need for healthcare personnel who receive the live attenuated vaccine to wear a mask following receipt of this vaccine.

Moving on from vaccine, the next couple of slides, starting with Slide 19, summarize some other issues, starting with the enforcement of respiratory hygiene and cough etiquette strategies. This is a very important aspect of our infection control approach to limiting the transmission of H1N1 in healthcare facilities. And it refers to the source control measures which reduce exposure risks because patients are instructed to cover their noses and mouths when they're talking, coughing or sneezing.

Now - this is a strategy that's been broadly applies in a lot of triage and waiting areas. And it certainly is applicable in all of those type of triage and waiting areas. But we also recommend that this respiratory hygiene and cough etiquette strategy be applied even after patients are admitted to facilities. So even when a patient is placed in an isolation room, when a healthcare personnel enters that room, the patient should be instructed to either put on a face mask or cover their nose and mouth with tissues.

Slide 20 summarized access control and triage measures, which are also important in controlling the spread of 2009 H1N1. One of the most important aspects of access control in preventing introduction of infectious patients into the facility is the establishment of non-punitive policies to insure that ill healthcare personnel do not come to work. And the importance of this recommendation cannot be overstated.

We have investigated several instances of transmission of 2009 H1N1 influenza in healthcare facilities where the source of the infection was a healthcare worker who came to work despite being sick. And so it's important that healthcare personnel be educated about the importance of not coming to work when they're sick. But just as important, we need to insure that healthcare personnel who do stay home when they're sick are not punished for doing so.

Healthcare facilities should establish mechanisms to identify patients and visitors with respiratory illness at all entry points to the facility so that they can appropriately triage those patients and potentially exclude those visitors if they are ill. And finally, there's the use of engineering controls to design triage and waiting areas in a way that minimizes exposure risks. For example, spacing of patients to increase the spacing of patient chairs or beds and also the use of partitions.

Slide 21 covers the management of visitor access and movement. It's important that we limit visitors for patients in isolation for influenza as much as we possibly can to those visitors who are important to the patient's wellbeing. We recommend that you instruct visitors to limit their movement within the facility and to insure that visitors are not present during any aerosol generating procedures.

The next slide, Slide 22, summarizes issues related to patient placement and transport. We should, as I mentioned earlier, instruct ill patients on the importance of source control measures and recommend to them that they continue to implement the respiratory hygiene and cost etiquette strategies, even after they've been admitted to our facilities by covering their noses and mouths either with a face mask or tissues and practicing frequent hand hygiene.

Patients with 2009 H1N1 influenza should be placed into private rooms with doors closed. It's important to note that negative pressure rooms are not needed for the care of these patients. If you're in a situation where you don't have availability of private rooms, we recommend that you consult with infection control staff to discuss alternate options.

With respect to transporting patients within the facility, we recommend that you follow whatever guidance you currently use in your facility for the transport of patients with infections conditions. But specifically that you limit the transport of these patients with 2009 H1N1 influenza as much as possible, to limit their transport as medically necessary transport, and that you are careful to insure communication with receiving areas so that all receiving areas are aware of the fact that the patient they're receiving is in isolation for 2009 H1N1 influenza and can then act accordingly.

Slide 23 covers isolation precautions. And again, this was a change from previous. Specifically now the last bullet, we are recommending the use of standard precautions in dealing with patients with H1N1 influenza with respect to the need for the use of gowns, gloves and eye protection.

Previously, there had been a recommendation to routinely wear gowns, gloves and eye protection for the care of patients with 2009 H1N1 influenza. And now that recommendation is that you use gowns, gloves and eye protection as

part of standard precautions if splashes or contact with infectious material is anticipated.

Other important components of the isolation precaution are that you limit the number of healthcare personnel entering isolation rooms to those that are necessary to provide care and instruct healthcare personnel on the importance of hand hygiene before and after patient interactions.

With respect to the duration of isolation of patients who have 2009 H1N1 influenza, we recommend that patients with H1N1 remain isolated for seven days after the onset of symptoms or until 24 hours after resolution of symptoms, whichever is longer. Now this is an importance difference from the exclusion criteria for school children or people returning to work and healthcare workers coming back.

In this situation, we are recommending that the seven-day isolation still be applied because these patients are in isolation in a healthcare facility where the risk of transmission are higher.

With respect to symptom resolution with using cough as a symptom, it's an area where clinical judgment has to be applied. Oftentimes we know that cough following influenza infection, including H1N1, can be very prolonged. And it's unclear if a cough alone is a symptom that would require ongoing isolation.

Now in situations where isolation resources are limited, we do recommend that priority for isolation resources be given to patients who are earlier in the course of illness because we do know that the highest risk or the peak of shedding is early on in the course of illness.

And finally, Slide 25 on your slide set covers environmental cleaning. Routine cleaning and disinfection strategies that are normally used for seasonal

influenza are still effective for 2009 H1N1 influenza. No changes need to be made and that includes with respect to the management of laundry utensils and medical waste.

And that concludes this section of the talk and David, let me turn it over to you to lead us in the discussion beginning with respiratory protection, which is Slide 26 on your slide set.

David Weissman: Thank you, Arjun. This slide shows an outline of the topics I'll cover specifically with regard to respiratory protection. After talking about respiratory protection, I'll also briefly discuss management of ill healthcare personnel and a bit about guidelines for anti-viral treatment.

For respiratory protection, the outline of topics will begin with a little bit of a discussion of current views of aerosol transmission. We'll talk about an important recently published randomized controlled trial of respiratory protection in healthcare settings. We'll talk about the current CDC respiratory protection recommendation. And then we'll talk about respiratory protection, supply considerations and things that facilities can do to get the most possible benefit from the supplies of respiratory protection that they have available.

The next slide shows views of aerosol transmission. The traditional view of viral aerosol transmission was that agents could be divided into those that transmitted via the airborne route in small particle aerosols; or in large droplets. Airborne routes are traditionally thought of as causing prolonged airspace contamination. In this case, if someone goes into a contaminated air space, even hours after a contagious patient has been there, they could become infected. Airborne transmission could also cause long distance transmission, for instance, through HVAC systems and to other rooms.

On the large droplet side, projection of large droplets by coughing or sneezing over relatively short distances with impaction on mucus membranes was the mechanism of transmission.

A more contemporary view has recently been expressed that aerosol transmission can be characterized along a continuum as obligate, preferential or opportunistic, depending on that agent's ability to be transmitted and induce disease through fine particle aerosols and other routes. So instead of there being a clean division between agents, there's actually a continuum where there's a recognition that agents can transmit over multiple routes.

Studies on influenza transmission show that airborne or inhalation transmission is one of the potential routes of transmission. A detailed description of that literature is in a recent report from the Institute of Medicine and there's a link on the slide to that report. As Arjun said earlier, the relative importance of the various routes, including airborne transmission, remains unclear.

The next slide is, "Does Respiratory Protection Prevent Transmission in Healthcare Settings?" This addresses a very important recently published effectiveness study. Even if an intervention is potentially efficacious, it may not be effective when applied in the real world.

Although it recommended respiratory protection as a preventative intervention, the IOM report noted the need for effectiveness research. This is an important randomized controlled study comparing the incidence of influenza in Canadian nurses who were randomized to either a group using surgical masks or a group using N95 respirators. It was published earlier this month in JAMA.

The next slide shows some of the differences between face masks and disposable N95 respirators. That's Slide 29. You can see the pictures on the

right hand side of the slide, with the surgical mask above and the N95 respirator below.

The surgical mask is, by definition, a loose-fitting device. It does allow leakage of small particle aerosol around the edges of the device. So it will protect against large droplets or splashes or sprays from hitting the mucus membranes of the nose and the mouth. If you have a mask that also includes eye protection, it might protect the eyes as well. But it will not protect against inhalation of small particle aerosols.

On the other hand, look at the N95 respirator below, also called a disposable filtering face piece respirator. It's a tight-fitting respirator that, in addition to protecting against splashes and sprays and droplets, because it seals tightly at the edges with the skin of the face, it forces inhalation through the filter material, thereby providing protection against small particulate aerosols.

The next slide shows some of the results from the randomized trial in which nurses were randomized to surgical masks on one side versus N95 respirators on the other side during flu season with follow-up of the nurses across the season. And as you can see, there were 212 nurses who were in the surgical mask group and 210 nurses in the N95 group. The third column shows the reported P value from the study.

In the first set of rows, you can see lab results. In the first row is "any lab diagnosis of influenza" which occurred in 50 of those in the surgical mask group and 48 of those in the N95 group. There's no statistically significant difference.

As you can see in the next row, most of those with laboratory diagnoses were diagnosed on the basis of four fold rises in serum antibody titers between the beginning and the end of the study.

A small minority were diagnosed based on positive PCR studies of respiratory secretions obtained when the participants were actually sick with clinical illness. And as you can see in the next couple sets of rows, unfortunately for the study, clinical illness was relatively rare. As you can see, influenza-like illness, defined as a cough and temperature greater than 38 degrees Centigrade, occurred in nine of those in the surgical mask group and two of those in the N95 group, P equal .06 for the difference.

In terms of nurses reporting fever, there were 12 in the surgical mask group and two in the N95 group, with P = 0.007. However, this was self-reported, it was not objectively measured, which is a issue.

In terms of home exposure to influenza, home exposure was relatively common in both arms of the study. So, for clinical illness and lab changes in study participants, it's unclear whether these occurred as a result of exposure at work or exposure at home to spouses or roommates or children.

The next slide shows a summary. Four-fold rise in serum antibody titers was common. It was rarely associated with symptoms and it was not different between the study arms. An important consideration raised by these findings is that if asymptomatic influenza is common in nurses, it might have really important implications for infection control.

So that's an important question raised by the study. Secondly, clinical illness was rare and tended to be less frequent in the N95 group. Small numbers make those clinical outcomes difficult to interpret. An additional concern is that there was a lack of coherence in outcomes between lab findings (driven largely by the fourfold rises in titers) and actual clinical illness. The results didn't go in the same direction and weren't consistent.

More studies are needed with better power to address clinical illness as an outcome. Also, as more studies become available, it'll be possible to assess

coherence of results across multiple studies and to pull data from multiple studies for meta-analysis. So this study is a very important first start but we need to continue.

The next slide goes to the current CDC respiratory protection recommendation. The use of respiratory protection that is at least as protective as a fit tested disposable N95 respirator by healthcare personnel who are in close contact with patients with suspected or confirmed 2009 H1N1 influenza is recommended.

Close contact is defined within the guidance as working within six feet of the patient or entering into a small enclosed airspace shared with the patient that is about the size of an average patient room. This recommendation applies uniquely to the special circumstances of the current pandemic. This differs from the usual airborne transmission recommendation in that we know from clinical epidemiology that transmission with influenza occurs over short distances. We know that it doesn't project over long distances, such as through HVAC systems, and we know that there's not prolonged air space contamination, as you would see with something like TB. This is the reason for the differences between this recommendation and what you might see recommended for an agent like TB.

The next slide notes required respirator program elements, Slide 33. This slide is there only to make the point that since respirators are required, they need to be used within the context of a respirator program. An excellent resource for the details of respirator programs is the link at the bottom of the slide to the OSHA respiratory protection eTool, which can help walk you through the entire process.

The next slide talks about respiratory protection supply considerations. The updated recommendations recognize that serious supply issues do exist and

provide strategies for getting the most benefit from available supplies of respiratory protection.

The highest priority is to ensure that respirators remain available for situations where respiratory protection is most important, such as performing aerosol generating procedures on patients with suspected or confirmed 2009 H1N1 flu or providing care to patients with other diseases where respiratory protection is important, such as TB.

The next slide includes strategies to conserve supplies of disposable N95 respirators. Those include minimizing the number of individuals who need to use respiratory protections through the use of engineering or administrative controls, such as those described by Arjun earlier; to use alternatives to disposable N95 respirators were feasible - which I'll briefly talk about; to extend the use and consider reuse of disposable N95 respirators, which I'll talk about; and, finally, to prioritize the use of N95 respirators for those personnel at highest risk of exposure when shortages make it impossible to provide respiratory protection to everyone with close contact.

The next slide shows types of respirators mentioned in the guidance. This is Slide 36. On the left hand side are examples of filtering face piece respirators, such as disposable N95 respirators. Those can be with or without exhalation valves. In the middle you can see a powered air purifying respirator, which is a loose fitting respirator. On the far right hand side, you can see an elastomeric half piece face piece respirator. The advantages of these respirators is that they can be cleaned and disinfected for reuse by a single individual or for use by multiple individuals after cleaning and disinfection between uses.

In general, within the guidance, we suggest that alternatives to filtering face piece respirators might be most useful for preserving the ability to provide respiratory protection for aerosol generating procedures. As you all know,

there are issues in terms of using PAPRs and elastomeric respirators in many clinical settings. For example, the noise of a PAPR, or powered air purifying respirator, may prevent you from being able to listen through a stethoscope. We realize these issues exist, but these alternatives can potentially be used to extend the filtering face piece respirators.

The next slide shows that there is far more than one kind of filtering face piece respirator. So one potential approach to dealing with supply issues is to use filtering face piece respirators other than N95s. As you can see, these are designated by different letters and numbers, depending upon resistance to oil and depending upon the proportion of particles filtered. So be aware that there are more than just N95 respirators that can be used.

The next slide talks about extended use of disposable N95 respirators, Slide 38. We define that as wearing respirators over serial patient encounters without removal or redonning between encounters. In many industrial settings, we define single use as wearing a respirator over an eight hour shift.

And in terms of extended use in a healthcare setting, our biggest concern of course is contact transmission. There are steps that can be taken to minimize the risk of contact transmission, which involve discarding disposable N95 respirators following use during aerosol generating procedures, which might contaminate them more heavily; discarding them if they're obviously contaminated; considering the use of a face shield to prevent surface contamination from droplets or sprays and performing hand hygiene before and after touching the respirator.

The next slide talks about reuse of disposable N95 respirators, which we define as removing and redonning the disposable N95 respirators between patient encounters. This is less desirable than extended use because it involves more touching of the respirator and face than extended use.

In terms of steps to minimize the risk of contact transmission with reuse, we recommend all the steps that I already noted for extended use, plus reuse only by a single wearer - one respirator, one person; not to reuse a disposable respirator that's obviously contaminated, damaged or hard to breath through; to store the respirator between uses in a clean breathable container, such as a paper bag to allow it dry out; and to avoid touching the inside of the respirator. In general, reuse should only be across a single shift. In general, you shouldn't take a disposable N95 respirator and use it for multiple days at a time.

The next slide talks about prioritized use mode. That mode is used when measures to minimize consumption of available respirators aren't enough to overcome supply shortages and the ability to provide respiratory protection for situations where it's most important, like aerosol generating procedures and taking care of patients with other agents such as TB, is threatened.

The goal is to maintain the ability to provide respiratory protection for situations where it's most important until supplies are expected to be replenished. Under prioritized use mode,, respiratory protection is extended to groups other than those in the highest priority situations in order of priority, as allowed by supply constraints. So you go down as far on the priority list as you can, as dictated by your supply situation.

Those in close contact with suspected or confirmed influenza cases who can't receive respiratory protection while in prioritized use mode because of the supply situation should be provided with surgical masks, which will provide protection against droplets and sprays and are the traditional equipment that's been used in the past.

The next slide shows an example of a prioritization scheme for those not involved in aerosol generating procedures that would be used when in prioritized use mode. And you can see that this breaks out groups by exposure

scenario, by personal risk factors for complications, and by vaccination status. Details are provided in the guidance about this. As you can see from the chart, one thing that we can do actively to drive as many people as possible into lower priority groups is to vaccinate them.

The next slide, Slide 42, shows what we have defined to be aerosol generating procedures in the guidance. I won't read you the list but these are all things that can generate fairly intense aerosols of respiratory-derived material.

I will go to Slide 43 now, monitoring for illness in healthcare personnel. Facilities should establish mechanisms to proactively identify ill healthcare personnel and monitor illness in healthcare personnel. Healthcare personnel should be instructed not to report to work when they're sick and they should be educated on when to seek treatment when they're ill, especially if they have personal risk factors for complications or if they develop symptoms such as shortness of breath that are concerning.

The next slide shows the updated guidelines for exclusion of healthcare personnel with respiratory illness who are febrile. They should be excluded from work for at 24 hours after they no longer have a fever without the use of fever reducing medications. This is because it is during the period of fever when viral shedding is the highest. The exception to this exclusion recommendation would be healthcare personnel who work with severely immunocompromised patients. I'll discuss this in a couple of slides.

The next slide, Slide 45, shows what to do with healthcare personnel who have respiratory illness without fever. They should be allowed to continue or return to work again, with the exception of those who work with severely immunocompromised patients.

Slide 46 shows what to do with those who work with severely immunocompromised patients. They should be excluded for seven days or

until resolution of symptoms, whichever is longer. Judgment is required for dealing with people with persistent cough, as Arjun noted earlier. Workers can return to work sooner if absence of H1N1 influenza is documented by PCR of respiratory secretions.

Finally, the last content slide addresses antiviral treatment and chemoprophylaxis. Detailed recommendations are available in a separate guidance document that does address healthcare personnel. In general, treatment is reserved for those who have risk factors for complications or who develop signs of complications, such as shortness of breath. For full details, I would recommend that you refer to that separate guidance.

With that, I'll turn things back over to LeShaundra to go into questions and answers.

LeShaundra Cordier: Thank you so much for that presentation. We will now open up the lines for the question and answer session. Operator, we're ready to start.

Coordinator: Thank you. We'll now begin the question and answer session. If you would like to ask a question, please press star 1 on your touchtone phone. Please unmute your phone and record your name clearly so that I can introduce your question. Again, that is star 1 for any questions. And one moment while the questions register please.

Our first question will come from (Leslie Thompson), your line is open.

(Leslie Thompson): Yeah, I would like to know if we can get some clarification on the healthcare worker returning to work, you know, except for severely immunocompromised, I know for LAIV we've defined severely immunocompromised as bone marrow transplant. Is that a similar guidance for this or can you clarify that.

Arjun Srinivasan: This is Arjun, that's a good question. It's a discussion that's come up and I think it's hard to be rigid about that. Certainly the criteria for LAIV would apply in certain areas where you've got bone marrow transplant patients.

But the important potential difference for return to work of an ill healthcare personnel is for LAIV, the risk of transmission of influenza from a healthcare worker who's received LAIV to a patient is currently a theoretical one. This has not been documented, it's an attenuated vaccine, it's not the wild type virus. And so there's a theoretical concern which is why we provide that restriction in bone marrow transplant units. But we don't provide that restriction for working with other immunocompromised patients.

For healthcare personnel who are themselves ill, the situation is very different. Those healthcare personnel, there is much more than a theoretical risk that they are - that they could transmit infection to others. We know that healthcare workers have transmitted infection to others.

You know, where that stands, though, after they've been symptom-free for about 24 hours is somewhat more - is somewhat less clear. So there, I think the facility needs to use some degree of flexibility, some degree of judgment. You know, if you have a neonatal setting, there are some NICU directors who have told us that they are extending exclusion periods for their healthcare personnel.

But it's very situationally dependent on the availability of other healthcare personnel to fill in for those healthcare workers. And in other places, they have decided not to do any sort of additional extension of exclusion of ill healthcare personnel. And they point out, quire rightly so, that there are immunocompromised patients throughout healthcare facilities and it becomes very difficult to do those specific restrictions in other areas.

But it's something I think you should discuss at your healthcare facility. If you do have concentrations of patients who you think are at high risk, those may be settings where you could apply longer exclusion criteria for ill healthcare personnel. Again, though, that decision has to be very carefully balanced with the down side of prolonged exclusion of healthcare personnel from an ability to provide care for patients.

(Leslie Thompson): And is there any consideration of possibly masking somebody that comes back to work, say, like our ER. You know, they say, well, you never know who's going to come in the door. You may have immunocompromised, you may not. Is there any consideration to doing a mask in that situation?

Arjun Srinivasan: Yes, again, it's a strategy that people have talked about for some of those reasons that you suggest. And I think that, again, you know, it's sort of a source control measure. I think that the better part of valor is to, you know, follow exclusion criteria. If people do have ongoing symptoms, like they still have a runny nose or they're still not feeling well is to continue the exclusion.

But you know, if the healthcare worker feels well, is (a febrile) back for 24 hours, then most places that we've heard from at least are allowing people to go back without having to use masking because they're finding that to be a little bit difficult to implement from a logistic standpoint.

(Leslie Thompson): Thank you.

Coordinator: Our next question will come from (Sue Heddiger). Your line is open. (Sue), your line is open. Please check your mute feature.

(Sue Heddiger): Hello?

Coordinator: Your line is open.

(Sue Heddiger): Hello? Hello, can you hear me?

David Weisman: Yes, please go ahead with your question.

(Sue Heddiger): Okay, I have a question about cohorting of patients, especially our rule out type of patients. We do have a huge pediatric population and we're having problems as far as when the DFAs are ordered were, you know, considering cohorting. But then if they start the patient on Tamiflu, does that make a difference? You know, are they more, you know, likely to have it? You know, it's a clinical judgment on that one also.

David Weissman: The clinical guidance doesn't address the issue of a different period of isolation for those on Tamiflu. In general, if space is available, you know, we recommend that you treat a person on Tamiflu the same as a person who wasn't on Tamiflu.

But we also recognize that, you know, space is an issue and we recognize that preserving isolation rooms for those who are shedding the most , you know, is obviously something that you want to do. So you know, as people get later in their course and past fever, you know, we recommend that that's when you think about cohorting.

In terms of dealing with Tamiflu as an indication for cohorting as opposed to an individual room, we haven't said anything. And I guess I'd defer to Arjun to see what his thoughts were.

Arjun Srinivasan: I think that's a good question and you raised, you know, one of the really important challenges, of course, with respect to cohorting because we're - normally when we're talking about cohorting, we talk about cohorting people who have the same pathogen. And here it's very difficult because, you know, as respiratory season moves on, we're going to have patients who have Novel

H1, seasonal influenza of various types as well as RSV and other respiratory pathogens.

And you know, I think that, you know, when you're in that situation of cohorting, I think you can do the best you can do. You try to, you know, use partitions, use spatial separation as best you can to keep those folks as separate as you can and until you make your decisions on where they need to be in your facility.

(Sue Haddiger): Okay, thank you.

Coordinator: Our next question will come from (Gwen Steinbeck), your line is open.

(Gwen Steinbeck): Yes, I'm a nurse that's working in this area and I - my concern is that if, you know, because it seems like we - there's a lot of controversy about just, you know, how this is transmitted and whether we have enough information on - well, basically this study that you mentioned. I think it's being latched on to by certain individuals as a proof or that we don't need to use the N95 masks.

I guess as a healthcare provider, my concern is that - that I agree with your recommendation that because we don't have enough information yet that it seems correct to error on the side of caution and continue to, you know, recommend the N95. And I guess - I was wondering if you could speak something to the fact that, you know, my understanding is that we have facilities here that are basically denying nurses, you know, the use of the mask - the N95 mask based on a perceived shortage.

And I understand that, you know the concept of the shortage of the mask and all. But I guess my - asking you would be why not concentrate on trying to ramp up the supply at this time and not encourage people to take chances that are unnecessary until we know for sure. And I guess another sideline also is

that I realize - we have some facilities that recommend only using the N95 mask in situations, you know, certain procedures that they believe are aerosolizing.

And that - and one of those is with nebulizer treatments. So I guess my concern is, since we don't know enough, we don't know - if a patient is receiving those treatments on a periodic basis, how long it takes for that aerosolized effect to dissipate?

I guess I'm finding that I'm having difficulty, you know, reasoning with people about the fact that maybe we need to error on the side of caution if we have a patient like that. And we work for a facility that says only use the mask in times of, you know, during these certain procedures that we don't know how long it has taken for that aerosolization to dissipate. And you know, shouldn't we be, you know, continuing to error on the side of caution and use the N95 mask?

Arjun Srinivasan: This is Arjun, I think you raised a couple of issues there and I'll comment on a couple of them. You know, the - we recognize that the supply issues are real in many places. N95 respirators in some places are in short supply and facilities are unable to get them. Manufacturers we know are working very hard to increase the supply but we also know that increasing supplies in the short term is not something that's realistic.

Factories they've told us are working at full capacity and it's not a situation where they can somehow open a new capacity to manufacturer these masks. So they've told us that supply shortages are going to be something that we're going to have to deal with.

Given that, what we're recommending for healthcare facilities as David has explained, you know, our guidance is that the N95 respirator should be used

for all patient care activities. However, that is not likely to be realistic as facilities encounter shortages.

So what we're recommending facilities do is assess the supply that they have and look realistically at how that supply would be used for the care for patients where the risks are highest, so for aerosol generating procedures and for other situations, like the care of patients with tuberculosis or varicella, where the N95 respirators would also be needed. And that the highest priority should go in those situations.

But then if there is availability of supply to extend to other situations, that the respirators should be allocated to other healthcare personnel in accordance with the criteria and the prioritization scheme that's laid out in the table in the guidance document. So if you do have adequate supplies then yes, the N95 respirators would be used for all healthcare personnel providing care to patients.

With respect to the nebulized treatments, the nebulizer treatments are unclear as you pointed out with respect to their risk for aerosol generation. They're not listed as one of our high risk aerosol generating procedures because they don't fall in the risk category of those other procedures. But they certainly have the potential to generate aerosols and they are listed in the guidance documents as sort of a secondary type of aerosol generating procedure, where consideration should be given to an N95 respirator.

David, do you have any other comments?

David Weissman: There's actually some literature that exists that administering (inhaled) saline can actually decrease the amount of bioaerosols that is produced from respiratory secretions by changing the characteristics of the respiratory secretions. So even though you can see somebody, you know, exhaling an exhaust after a nebulizer treatment, most of that is the saline and the

medication from the jet nebulizer and it isn't , you know, necessarily , you know, a high amount of respiratory secretions. The literature really doesn't support nebulizer treatment as being a super high risk procedure. So that's why it did fall into that secondary group, as Arjun described.

Another thing I mentioned on the supply side is that NIOSH is working to put together a Web page that will provide information about where people can get respiratory protection from. There are a relatively limited number of suppliers of respiratory protection to healthcare facilities. But there's a much larger universe of suppliers that typically just sell to industrial settings. So we're in the process of putting together a Web page. It's not up yet, but it will be up before too long. Hopefully, it will help your supply people find sources other than the ones they usually use.

(Gwen Steinbeck): Excellent. And I appreciate that because, you know, I realize again that there is this need to conserve supply. But when you're, you know, when it's you, you really can and you're thinking about the implications of, you know, now, what could happen either to you or to, you know, anyone that you come in contact with. If you ended up contracting it, you know, including your own family, then you're - it's very hard when it's you going in there to say, you know, that we need to not use something that maybe we have now. That, you know, until we know better, it seems to be prudent to error on the side of caution. That's when it becomes hard to say, okay, I know I'm - maybe I'm not the highest priority. But you know, at this point...

David Weisman: Our effort is to get the best benefit we can from the supplies that we have.

(Gwen Steinbeck): Well, that is - I appreciate it and thank you very much for...

David Weissman: Thank you.

(Gwen Steinbeck): For all your efforts.

Coordinator: Our next question will come from (Peter Kelly), your line is open.

(Peter Kelly): Thank you. I'd like to ask a question about the duration of isolation precautions for patients. We've come across a situation where healthcare personnel for one reason or another have repeated PCRs on patients before they're moving them from, say, an intensive care unit to a step down unit. And you run into the conflict between duration of symptoms and presence of positive PCRs.

One, have you encountered this before in questions; and two, how can we resolve it?

David Weissman: Well, I think two is the harder thing. But as to number one, you know, I think we actually have language in the guidance that says that clinical management of the patient should be based on their clinical condition and not based on our guidance on duration of precautions. So whether somebody goes from an ICU to a step down, you know, should be based on their respiratory status or their hemodynamic status or , you know, their acuity and not based on the results of a PCR lab test. Arjun, would you have anything to add to that?

Arjun Srinivasan: Yeah, I think you're raising a - it's a very - it's a good point, it's been a difficult one. We know that there are patients who shed for longer periods than just seven days. At the same time, I don't think we'd - we wouldn't want to make a recommendation that, you know, patients need to remain in isolation until their PCR are negative.

So it's an area where I wish we could provide a categorical statement for how long these patients who are on ventilators in ICUs need to stay on precautions. Currently the seven-day criteria is what were used. If you had a PCR that showed the person was still shedding, yes, I think that would be reasonable to leave the person in isolation precautions.

But I wouldn't - we wouldn't want to set up the situation where they have to continue to set up PCRs until the person is PCR negative until they came off of isolation. So you know, I think this is an area where we - you're going to continue to struggle. I know there are people that are trying to gather more data to help guide us on, you know, the durations of viral shedding and some of these other, you know, other types of situations.

But one thing I think the data do suggest is that the shedding drops of fairly quickly during the course of an illness. So even if a patient is shedding for a prolonged period of time, it's possible that the amount of shedding is low enough that it may not pose very much transmission risk.

But again, we don't have sufficient data to be able to make a good firm recommendation on duration during that situation.

LeShaundra Cordier: Operator, I think we have time for one more question please.

Coordinator: Okay, our last question will come from (Jeffrey Jones). Your line is open.

(Jeffrey Jones): Yes, my question was related to the use of the N95 over multiple days - I mean, on a single day. I was wondering what your reference was for that particular recommendation.

David Weissman: Well, this is David, I'll jump in on that. You know the clearance for use of N95s and approval of N95s has traditionally been across a single shift. They're used in a lot more than just healthcare settings. They're often used in very dusty , you know, industrial settings that are a lot more challenging to the respirators because they will be more likely to clog up the respirator and make it difficult to breathe through. Even in those very challenging settings, the conditions for use of the respirator are across a shift. And so in a healthcare setting, where you have a very, you know, clean environment with not a lot of

dust, the respirator should do fine from the physical standpoint of not getting clogged up and continuing to function.

LeShaundra Cordier: Okay, I want to thank our presenters for providing our listeners with this information. I would also like to thank our participants for joining us today. In case you didn't get the chance to ask your question, please send an email to www.coca@cdc.gov. That's www.coca@cdc.gov.

The recording of this call and the transcript will be posted to the COCA Web site at www.emergency.cdc.gov/coca within the next week. You have a year to obtain continuing education for this call. All continuing education credits and contact hours for COCA conference calls are issued online with the CDC training and continuing education online system, www2a.cdc.gov/tceonline/. Thank you again for participating and have a wonderful day.

Coordinator: That does conclude today's conference. You may all disconnect at this time.

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